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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/737,638

12/14/2000

F. Scott Johnson

TI-23703.1

2828

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09/25/2002

TEXAS INSTRUMENTS INCORPORATED
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EXAMINER

HA, NATHAN W

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/737,638

Applicant(s)

JOHNSON, F. SCOTT

Examiner

Nathan W. Ha

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 12/14/02 fails to comply with 37 CFR 1.98(a)(1), which requires a list of all patents, publications, or other information submitted for consideration by the Office. It has been placed in the application file, but only references 4,992,828 and 5,444,285 have been considered, the other information referred to therein has not. Please provide a proper list in the next communication paper.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 12 is rejected under 35 U.S.C. 102(b) as being anticipated by Chin et al. (US. 4,992,848, hereinafter, Chin.).

In regard to claim 12, Chin et al. discloses, in fig. 9, a method of forming an emitter contact for a bipolar junction transistor comprising steps of:

providing a silicon substrate 101 having a collector region 102, a base region 115 disposed within collector region 102, an emitter region 114 disposed within base region 115;

depositing a base polysilicon layer 111 positioned at the surface of silicon substrate 101 in contact with the base region 115, and defining an aperture with a sidewall (not numbered) exposing the base and emitter regions of the silicon substrate; forming a spacer 109 extending upwardly from the silicon substrate and to cover the sidewalls, the spacers covering the base region and partially covering emitter region; and

forming an emitter electrode 105 positioned within the aperture in engagement with emitter region, the spacer, and the substrate.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 13-15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al. in view of Brighton (US 4,839,305).

Chin et al. as describe above, discloses all the claimed limitations. However, Chin et al. fails to disclose the steps of depositing an oxide layer onto the base polysilicon and forming an aperture through these layers.

Brighton, in fig. 2, teaches a method of making a self-aligned transistor includes an oxide layer 22 formed onto the polysilicon 20, and a aperture 24 is formed through these layers in order to be able to dope the region embedded blow.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to form the aperture therethrough as taught by Brighton in Chin in order to be able to dope the region embedded blow.

In regard to claims 14-15, Brighton further discloses the step of forming an emitter by a result of etching the polysilicon in order to form an emitter contact; see col. 3, lines 45-50. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the steps as taught by Brighton in Chin in order to form the emitter contact in the open widow.

6. Claims 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chin as applied to claim 12 above, and further in view of Walczyk et al. (Tailoring Interface Oxide for Polysilicon..., IEEE, 1992, pp. 84-87.).

In regard to claim 16, Chin discloses all of the claimed limitations as mentioned above, but does not expressly mention the use of in situ and rapid thermal annealing in the process of making the device. It should be noted that the method of using "in situ" and annealing is well known and have being used widely in the art of making semiconductor devices since in situ can be used to producing a minimum interfacial oxide known as "Oxide Free process", and Rapid thermal annealing process can be used to avoid damaging the surface of the device. For example, Walczyk et al. evidently teaches these processes in his article of how to make an efficient semiconductor device; see page 84 col. 2 last paragraph and page 85, col. 2, first paragraph.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the processes as taught by Walczyk et al. in Chin

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in order to take advantages of these processes to improving device characteristics since in situ process can be used to producing a minimum interfacial oxide known as "Oxide Free process", and Rapid thermal annealing process can be used to avoid damaging the surface of the device.

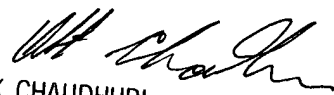
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Ha whose telephone number is (707) 305-3507. The examiner can normally be reached on M-F 9:00-5:00(EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 305-3431, or 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Nathan Ha
September 20, 2002


OLIK CHAUDHURI
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TECHNOLOGY CENTER 2800